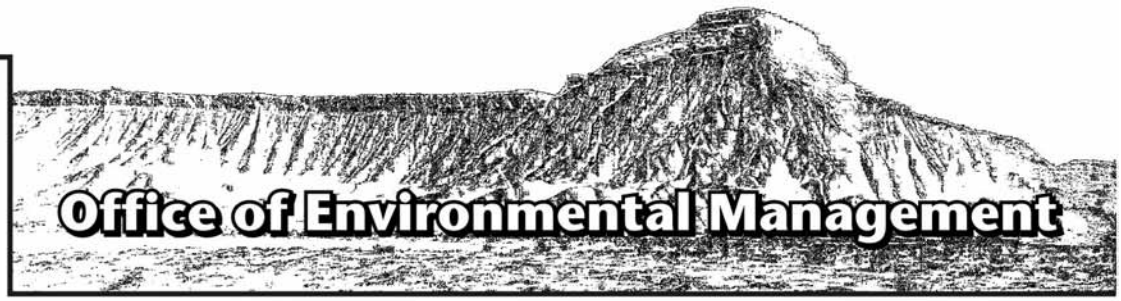
Hanford Geophysical Logging Project

Project Management Plan

October 2005



U.S. Department of Energy

Work Performed Under DOE Contract No. DE–AC01–02GJ79491 for the U.S. Department of Energy, Grand Junction, Colorado.
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GJO-HGLP 1.6.2
Revision 1

Hanford Geophysical Logging Project

Project Management Plan

October 2005

Prepared for
U.S. Department of Energy
Office of Environmental Management
Grand Junction, Colorado

Prepared by
S.M. Stoller Corp.
Grand Junction, Colorado

Work performed under DOE Contract No. DE-AC01-02GJ79491.

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Abbreviations and Acronyms

ACES ..... Access Control Entry System
ACWP ..... Actual Cost of Work Performed
ACWS ..... Actual Cost of Work Scheduled
BCC ..... Baseline Change Control
BCWP ..... Budgeted Cost of Work Performed
BCWS ..... Budgeted Cost of Work Scheduled
CAP ..... Cost Account Plan
CAM ..... Cost Account Manager
CDL ..... Commercial Driver's License
CFR ..... U.S. Code of Federal Regulations
CHG ..... CH2M HILL Hanford Group, Inc.
COR ..... Contracting Officer's Representative
CPR ..... Cost Performance Report
DOE ..... U.S. Department of Energy
DQO ..... Data Quality Objective
EAC ..... Estimate at Completion
ER ..... Environmental Restoration
ES&H ..... Environmental Safety and Health
ETC ..... Estimate to Complete
FH ..... Fluor Hanford
FY ..... Fiscal Year
GJO ..... Grand Junction Office
GRP ..... Groundwater Remediation Project
HASP ..... Health and Safety Plan
HPGe ..... High-Purity Germanium
HRLS ..... High-Rate Logging System
HSC ..... Hanford Site Contractor
HQ ..... Headquarters
ISMS ..... Integrated Safety Management System
LDMM ..... Leak Detection, Monitoring, and Mitigation
M&TE ..... Measuring and Test Equipment
NaI ..... Sodium Iodide
NCR ..... Nonconformance Report
NMLS ..... Neutron Moisture Logging System
ORP ..... Office of River Protection
ORPS ..... Occurrence Reporting and Processing System
OSHA ..... Occupational Safety and Health Administration
QA ..... Quality Assurance
QAI ..... Quality Assurance Instruction
QAPP ..... Quality Assurance Program Plan
pCi/g ..... Picocuries per Gram
PMB ..... Performance Measurement Baseline
PMC ..... Project Management and Control
RAS ..... Radionuclide Assessment System

Abbreviations and Acronyms (con't.)

RL ..... Richland Operations Office
RMS ..... Radionuclide Monitoring System
SGLS..... Spectral Gamma Logging System
TOM..... Task Order Manager
TOP..... Task Order Plan
VAR..... Variance Analysis Report
WBS..... Work Breakdown Structure
WRR ..... Work Readiness Review

1.0 Introduction

Beginning in 1995, the U.S. Department of Energy Grand Junction Office (DOE-GJO), through an agreement with the U.S. Department of Energy Richland Operations Office (DOE-RL), has conducted spectral gamma geophysical baseline characterization logging of existing vadose zone boreholes surrounding the Hanford single-shell tanks. The geophysical baseline characterization project was completed in fiscal year (FY) 2000. The collected data have been incorporated in a data set representing the spatial distribution of gamma-emitting radionuclides in the subsurface. These geophysical data provide the baseline to which previous gross gamma geophysical logs and future monitoring data can be compared to identify and assess continuing contaminant migration or stability. This work scope was initiated by DOE-RL and eventually closed out under the DOE Office of River Protection (DOE-ORP) upon the federal legislation identifying two reporting DOE offices at the Hanford Site. DOE-ORP activities officially began in October 1998 and currently continue.

In FY 2000, DOE-ORP requested that DOE-GJO continue development and implementation of a monitoring system to detect and track changes in subsurface profiles of gamma-emitting radionuclides in steel-cased boreholes. Initial development and testing of the Radionuclide Assessment System (RAS) began while the geophysics program resided solely with DOE-RL. The system was successfully deployed in 1999 and is used in existing vadose zone boreholes around and near the Hanford single-shell tanks to detect radionuclide contaminant migration resulting from tank leaks and/or other contamination events related to tank farms operations.

In FY 2003, DOE-ORP's focus changed from stabilizing the existing waste in the tanks to waste retrieval from the tanks. This change in focus also redirected the DOE-ORP contractor-operated Radionuclide Assessment System's (RAS) scope from routine monitoring to leak detection, monitoring, and mitigation (LDMM) in support of the waste retrieval projects. During FY 2003, Stoller proposed that a logging system capable of simultaneously collecting gamma and moisture data be procured to support the retrieval projects. This system would reduce the cost of the monitoring for the retrieval project and free the RAS to perform the monitoring work for which this system was originally intended.

S.M. Stoller Corporation (Stoller) evaluated several existing portable, small-diameter logging systems for the Radionuclide Monitoring System (RMS). A system was selected and procured in FY 2005 and will be fielded during the fourth quarter of FY 2005.

After completion of the tank farms baseline characterization project in FY 2000, DOE-RL requested DOE-GJO to conduct spectral gamma baseline characterization of approximately 850 boreholes in the vicinity of liquid waste disposal sites and solid waste burial grounds in the Hanford 200 Areas and vicinity. This work represents an extension of the original geophysical baseline characterization data, yet provides a broader perspective of Hanford's vadose zone related to the liquid waste effluent discharge sites (ponds, cribs, and retention trenches). In addition, DOE-GJO has been tasked with providing geophysical logs for wells being decommissioned and new boreholes drilled for waste site investigations and monitoring wells installed for the RCRA Groundwater Monitoring Program. Scope and schedules have fluctuated as Stoller has supported site priorities for characterization work. Completion of the logging

support operations is dependent upon site priorities, project funding, reliability of dedicated support services, and reliability of selected aging key systems equipment and hardware.

As the Technical Assistance Contractor for DOE-GJO, Stoller is responsible for planning and performing the geophysical baseline characterization logging and vadose zone geophysical monitoring tasks from its Hanford Office, with technical and administrative support from the Grand Junction Office. Per the DOE-RL directive in FY 2002, Stoller is responsible for "managing and performing the collection and reporting of surface and subsurface geophysical data associated with mapping, characterization and monitoring required to support the Hanford Groundwater Protection program." Project funding and oversight are provided by both DOE-RL and DOE-ORP. In order to reduce overhead costs, Stoller manages both projects using shared staff and resources.

2.0 Background

The Hanford Site occupies approximately 1,450 square kilometers (km^2) (560 square miles [mi^2]) within the semi-arid Pasco Basin of the Columbia Plateau in south-central Washington State. This area is under restricted public access and provides a buffer for the smaller fenced operational areas currently used for storage of nuclear materials, waste storage, and waste disposal. The Hanford Site was established in 1943 to produce plutonium in support of the U.S. nuclear weapons program. Uranium metal was fabricated into jacketed fuel elements used to run reactors for plutonium production. Irradiated fuel elements were processed in the 200 Areas to recover plutonium and uranium. High-level wastes, including activation and fission products, were stored in underground tank farms. Low- and intermediate-level waste streams were frequently discharged to ponds, cribs, ditches, and retention trenches in the 200 Areas.

The 200 Areas are located on a broad plateau at the approximate center of the Hanford Site. Chemical separation plants were located in both the 200 East and 200 West Areas. The 200 North Area was used for temporary storage of irradiated fuel rods, allowing certain short-lived radionuclides to decay. With the startup and operation of the separation plants, large quantities of wastes were generated. High-level radioactive wastes were neutralized and stored in underground tanks. Liquid wastes (primarily water) containing minor concentrations of radionuclides and chemicals were discharged to the soil column. Depending on contaminant concentrations and the need for isolation, liquid wastes were discharged either to surface ponds, ditches, and retention trenches, or to underground cribs, reverse wells, and French drains. These infiltration facilities were located in the 200 Areas near the processing plants and in the surrounding 600 Areas. Key radionuclides with half-lives longer than 10 years that were discharged to the soil column include cesium-137 (^{137}Cs), iodine-129 (^{129}I), strontium-90 (^{90}Sr), technetium-99 (^{99}Te), uranium-235 (^{235}U) and -238 (^{238}U), carbon-14 (^{14}C), americium-241 (^{241}Am), plutonium-239 (^{239}Pu) and -240 (^{240}Pu), and tritium (^{3}H [as tritiated water]).

Disposal of low-level, radioactively contaminated waste water to the ground in the 200 Areas was based on the assumption that the radionuclides would be retained in the vadose zone through sorption to sediment particles as the water migrated toward groundwater. The 200 Areas are located on an elevated flat plateau away from the Columbia River and are underlain by a relatively thick vadose zone of heterogenous sediments. These sediments present increased opportunities for sorption during migration and restrict the travel time for contaminants to reach the groundwater. The vadose zone beneath the 200 West Area ranges in thickness from less than 50 meters (m) (165 feet [ft]) to more than 100 m (328 ft); the vadose zone beneath the 200 East Area ranges from 37 m (123 ft) to 104 m (341 ft) thick; and the vadose zone beneath 200 North Area is 49 m (160 ft) to 50 m (164 ft) thick. Vadose zone sediments are dominated by highly permeable, uncemented, unconsolidated gravel and sand deposits laid down by cataclysmic flood events that occurred during the last ice age. Individual bedding is highly variable and laterally discontinuous. In the 200 West Area, the vadose zone also includes less permeable layers of finer grained silt and cemented gravels underlain by consolidated fluvial gravels deposited by the ancestral Columbia River system. Locally, this less permeable layer may act as a temporary barrier to downward movement of liquids and vapors, and may likely enhance lateral spreading of contaminated fluids along its upper contact.

A large number of boreholes and groundwater monitoring wells have been drilled in and near various waste sites. Many are known to be available for well logging, and many have been logged in the past using a variety of geophysical logging methods. As such, data quality is highly variable. Additional boreholes and groundwater monitoring wells are being planned in support of ongoing site characterization or remediation activities. Most boreholes are 4 to 12 nominal inches (in.) inside diameter and have been constructed with one or more strings of steel casing. Grout and perforations are also possible. Borehole depths vary from tens of feet to several hundred feet.

3.0 Project Description

The Hanford Geophysical Logging Project represents a continuation of work begun in 1995 as the DOE-RL Hanford Tank Farms Vadose Zone Baseline Characterization Project. Current project scope is focused on logging support to: 1) Groundwater Remediation Project (GRP) waste site Remedial Investigation/Feasibility Study Assessment of the 200 Area Plateau (DOE-RL); 2) installation of new RCRA groundwater monitoring wells (DOE-RL); 3) 200 Areas Spectral Gamma Baseline Characterization Project (DOE-RL); and 4) Hanford Tank Farms Vadose Zone Monitoring Project (DOE-ORP). This document is a modification of the existing project management plan to reflect current project objectives and organization. For project plan and procedure purposes, work performed for both DOE-RL and DOE-ORP is collectively referred to as the Hanford Geophysical Logging Project.

Several logging systems have been developed by DOE-GJO for logging at Hanford. The Spectral Gamma Logging System (SGLS) utilizes a high-purity germanium (HPGe) semiconductor detector with a relative efficiency of approximately 35 or 70 percent detectors, which are capable of quantifying gamma-emitting radionuclides from background levels to several thousand picocuries per gram (pCi/g). A second system, the High Rate Logging System (HRLS), has been specifically developed for use in zones of high gamma flux. With shielding, this system is capable of measurement up to several hundred million picocuries per gram. Both the SGLS and HRLS utilize cryogenically cooled detectors operated in move-stop-acquire mode with count times on the order of 100 to 200 seconds (s) per data point, usually at 1-ft depth increments. These systems provide accurate and defensible data for characterization purposes, but are too slow for routine monitoring.

The RAS was developed for monitoring purposes. This logging system utilizes a series of three sodium-iodide (NaI) detectors to detect gamma activity over a wide range. Spectral resolution is not as good as the SGLS, but the RAS is simple to operate and provides for total counts in a series of energy bands. The RAS is operated by tank farm contractor operating staff. It was specifically designed to collect data at a much faster rate and is mounted on a more maneuverable vehicle. The basic purpose of the RAS is to detect changes in gamma activity over time.

The RMS was developed for monitoring purposes supporting tank waste retrieval projects. This logging system utilizes two sets of Geiger-Mueller detectors, an NaI detector, and neutron-moisture probe to monitor total gamma-ray activity and moisture content in the vadose zone around tanks undergoing waste retrieval operations.

The RAS and RMS are operated by the Hanford Site Contractor (HSC) responsible for tank farms operations. Boreholes in the vicinity of tanks undergoing waste retrieval operations are monitored on a regular basis – before, during, and after retrieval. The RMS, RAS, and Neutron Moisture Logging System (NMLS) may be used to detect any leaks associated with retrieval operations. Stoller provides data interpretation, when requested, and recommendations for monitoring in other boreholes, based upon contamination detected by the baseline, proximity to tanks with known leaks, and/or large volumes of drainable tank liquids. However, the extent and frequency of borehole monitoring activities depend solely on HSC tank farm operating priorities

and personnel assignments. DOE-GJO will provide oversight and technical support to the monitoring program. When necessary, the SGLS, HRLS, and/or NMLS may be used to investigate anomalies detected by the RAS and/or RMS. This work is being performed for DOE-ORP.

Two sets of plans and procedures will be maintained, one for each project. One set of procedures addresses the operation of the RAS and RMS in the tank farms, and the other relates to the overall operation of the SGLS and HRLS. Because the SGLS and HRLS may be used for either project, several procedures apply to both projects (e.g., SGLS logging procedures).

4.0 Project Organization and Responsibilities

Two DOE organizations are responsible for Hanford waste sites at which logging will be performed. DOE-RL manages the environmental restoration (ER) program, which is responsible for most liquid waste disposal sites in the 200 Areas and vicinity. DOE-ORP is responsible for the Hanford Tank Farms and associated facilities. Both DOE-ORP and DOE-RL provide funding to the DOE Headquarters (DOE-HQ) on the basis of approved scope, schedule, and cost baselines. DOE-HQ authorizes DOE-GJO and its contractor, Stoller, to perform the approved work scope. The responsible HSC will provide access to waste sites and support services to Stoller as further defined in this plan.

4.1 Responsibilities and Authorities of DOE-HQ

DOE-HQ will:

- Assign the responsibility for performance of the work to DOE-GJO and designate a single point of contact at DOE-GJO for coordination of work.

- Provide direction, as requested, and conduct periodic assessments (audits), financial reviews, and program reviews of Stoller activities in accordance with DOE Prime Contract number DE-AC01-02GJ79491. DOE-RL and DOE-ORP will be encouraged to participate and assist in these activities at the Hanford Site.

4.2 Responsibilities and Authorities of DOE-GJO

DOE-GJO will:

- Ensure that Stoller maintains and implements a Quality Assurance (QA) program that satisfies the requirements of DOE Order 414.1A, *Quality Assurance*.

- Provide appropriate direction to Stoller to initiate approved tasks consistent with assigned funding.

- Ensure Stoller maintains an Environmental, Safety, and Health (ES&H) program that complies with applicable DOE orders.

- Perform semiannual program and management reviews of the Stoller ES&H program to ensure continued compliance.

- Provide monthly status reports prepared by Stoller to DOE-RL and DOE-ORP in a timely fashion.

- Review and approve administrative plans and procedures prepared by Stoller to ensure that they meet the requirements of the specific work scope, are consistent with DOE-GJO policy and the QA program, ES&H program, and project control programs.

- Ensure that Stoller responds to ES&H and QA assessment findings in a timely fashion.

4.3 Responsibilities and Authorities of DOE-RL and DOE-ORP

DOE-RL and DOE-ORP will:

- Approve and support the work scope within their respective areas of responsibility.

- Provide sufficient and timely funding through DOE-HQ for assignment to the Stoller contract.

- Designate a single point of contact within both DOE-RL and DOE-ORP for coordination of activities.

- Provide direction and funding to HSCs as necessary to support spectral gamma characterization and tank farm monitoring.

- Promote integration of spectral gamma characterization activities within other Hanford programs, including the 200 Area Remedial Action Project, the Groundwater Monitoring Program, and the Groundwater Protection Program.

4.4 Responsibilities of Hanford Site Contractor Organizations

The following describes the support interface requirements from HSCs. These are general responsibilities and additional specific responsibilities may be further identified in negotiated Memorandum of Understandings.

At the direction of DOE-RL or DOE-ORP, the appropriate HSC will:

- Provide a single point of contact for Stoller.

- **Health Physics and Industrial Hygiene** – Define site access requirements, provide health physics and industrial hygiene technician support, source custodians and general Health and Safety oversight as required for logging activities at the tank farms and 200 Area waste sites, and support activities associated with the Hanford calibration facilities.

- **Training** – Use existing training courses and facilities, as needed, to meet entrance and operating requirements for the Hanford tank farms and 200 Area waste sites and integrate Stoller personnel into the Access Control Entry System (ACES).

- **Security** – Provide badging for access.

- **Vehicle Maintenance** – Provide mechanical maintenance and repair for the SGLS vehicles.

- **Facilities** – Provide office support facilities for field operations.

- **General Services** – Provide access for services, such as Stores, Central Files, and other general requests.

  – Provide copies of health physics and industrial hygiene records (e.g., surveys, personnel information) to Stoller.

  – Provide historical waste site and borehole documentation.

4.5 Responsibilities of Stoller Organizations

As the GJO contractor, Stoller, through its offices in Grand Junction, Colorado, and Richland, Washington, is responsible for project management, planning, cost account management, equipment maintenance and calibration, performing logging services, data management, data analysis and plotting, report preparation, and technical support to DOE-RL and DOE-ORP. The following sections describe the key positions and corresponding responsibilities in program and project management.

4.5.1 Program Manager

The Stoller Program Manager is the primary point of contact with the program sponsor and maintains direct responsibility, accountability, and authority for the assigned program. The Program Manager defines the scope of work with the sponsor, develops the overall cost estimate and master schedule, and serves in the primary management role until completion of the program.

The Program Manager:

- Provides for safety, environmental compliance, QA, and security within the areas of line-management authority.

- Has full authority in any matter involving program cost, schedule, personnel, and performance.

- Defines objectives, deliverables, and performance standards for the program.

- Issues Cost Account Authorizations to performing organizations and approves resulting Cost Account Plans (CAPs).

- Reviews and issues program performance reports and approves Variance Analysis Reports (VARs), requests CAP changes, and reviews variances to the baseline schedule. Initiates corrective action plans, when necessary.

- Ensures that project personnel follow action plans determined by oversight in the areas of regulatory compliance, health and safety, and QA.

- Ensures funds are provided for safety, environmental compliance, and security within all areas of line-management authority.

- Issues and implements all planning and procedure documents.

4.5.2 Project Manager

The Project Manager is responsible for managing project activities and reporting project status and changes to the Program Manager. The Project Manager:

- Manages project activities within authorized funding and approved scope and schedule, as directed by the Program Manager, and is responsible for cost and schedule control of project cost accounts.

- Directs the activities of Stoller personnel and subcontractors working on the project.

- Coordinates, staffs, directs, and controls project activities.

- Provides work scope and schedule direction to matrixed Stoller support organizations and reports project status to the program manager.

- Provides for safety, environmental compliance, and security within all areas of line-management authority.

- Coordinates all issues regarding the maintenance and calibration of logging instruments and equipment with the Project Field Lead.

- Coordinates equipment and personnel teaming with HSCs, as needed.

- Reviews and approves all project plans, procedures, reports, and formal deliverables.

- Has stop-work and restart authority for all project activities.

- Participates in management reviews and oversight of field activities.

- Consults with the Stoller QA Manager on matters concerning task order and procurement reviews and interpretation and implementation of QA program requirements established for project activities. Communicates QA requirements and issues to project staff.

4.5.3 Hanford Technical Lead

The Hanford Technical Lead is responsible for the technical direction of the project. The Hanford Technical Lead:

- Directs the technical aspects of the data acquisition operations.
- Manages the Hanford technical staff.
- Ensures that log data are processed and reported in a quality and timely manner.
- Is responsible for preparation of technical plans and procedures.
- Monitors long-term performance of individual logging systems.
- Is the primary contact for the GJO Technical Lead pertaining to technical issues.
- Is responsible for developing and issuing required technical reports.
- Is the primary point of contact for HSCs on technical issues.
- Reviews and approves individual logs and log data reports and other technical deliverables.

4.5.4 GJO Technical Lead

The GJO Technical Lead is responsible for providing technical assistance to the field teams. The GJO Technical Lead:

- Manages technical activities within authorized funding and approved scope and schedule, as directed by the Project Manager and the Hanford Technical Lead.
- Investigates technical issues associated with geophysical logging activities.
- Calibrates individual logging systems.
- Provides direction to matrixed Stoller support organizations on technical matters.
- Reviews and approves technical reports as assigned.

4.5.5 Project Field Lead

The Project Field Lead is responsible for the coordination and direction of field logging activities. The Project Field Lead:

- Supports and participates in work readiness reviews.
- Prepares work packages for field activities.
- Coordinates field activities with HSC personnel.
- Is the primary contact with the HSCs with respect to field activities.
- Supports the Project Manager in the planning, budgeting, tracking, and reporting of conduct of operations project activities.
- Supervises the acquisition of data with respect to the assignment and scheduling of field activities.
- Performs routine oversight of operations to ensure compliance with health and safety, QA, and environmental compliance practices and procedures.
- Has stop-work authority for field activities.

4.5.6 Services Provided by Other Organizations

Projects rely on integrated support from other Stoller organizations to accomplish the program work. The Program Manager defines the scope of work and the Stoller functional organization requirements for performance of program-related tasks through the matrix organization structure established for the project. The Cost Account Manager (CAM) establishes and controls discrete cost accounts.

The support available from Stoller functional organizations is summarized in the following sections.

- **Public Relations** – Public Relations is responsible for supplying information to DOE-RL and DOE-ORP and stakeholders regarding the project, as requested.
- **Health, Safety, and Security** – Health, Safety, and Security maintains a close working relationship with all Stoller organizations to ensure the protection of project personnel and the public. This organization is responsible for notifying program and project management personnel of safety or health hazards. Health, Safety, and Security provides technical support, assists with the preparation of the Health and Safety Plans (HASPs), and monitors project activities to ensure compliance with the *GJO Health and Safety Manual,* GJO 2 (Stoller 2002a).

- **Quality Assurance** – QA provides coordination throughout the life of a program to assist in implementing the Stoller QA program and to assist in the resolution of QA concerns. Independent assessments, surveillance, and oversight activities of program and project activities are performed in accordance with *GJO Quality Assurance Manual,* GJO 1 (Stoller 2002e) and the Project QA requirements established in Section 6.0 of this management plan.

- **Project Controls and Integration** – Project Controls and Integration supplies direct and indirect budget administration and reporting, budget control and analysis, and project control support to programs in accordance with DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets* as documented in the *GJO Project Management Control System Manual,* GJO 12 (Stoller 2002d). Scheduling support includes developing detailed critical-path network schedules for projects and maintaining schedule baselines to support project milestones. Estimating support includes development and verification of cost estimates and direction and appraisal of technical input to budgets to ensure adequate cost baselines.

- **Information Resource Management** – Information Resource Management provides computer and data communications support, support in the production of technical documents, and records management functions.

  - Computer and data management support are provided through telecommunications and networks and applications support groups that furnish data processing planning, computer operations, microcomputer support, software, verification/validation records, and data communications services. These support groups ensure that all information activities are planned and integrated, ensure adherence to company policy, procedures, and standards, and plan and administer data communications.

  - Support in the production of technical documents and presentations is provided by the visual technology group that provides technical writing and editing, composition and typesetting, graphic arts, photography, and centralized printing and duplicating services.

  - The Records Management group provides records management services to maintain program and project records and the associated working file index.

- **Human Resources** – Human Resources is responsible for activities related to personnel, including hiring, training, transfers, promotions, working conditions, compensation, benefits, and terminations.

- **Contracts and Finance** – Contracts and Finance administer all subcontracts and procurements and provide detailed accounting reports of all labor, materials, supplies, services, and other project costs. Subcontracts administration includes final assembly of bid packages and contract documents, solicitation of bids, award of contracts, contract administration, negotiation and execution of all contract changes, payment authorization, and contract closeout. Contracts and Procurement also implements the acquisition plan for the project in compliance with Federal regulations as documented in the *GJO Procurement Manual*, GJO 18 (Stoller 2002c).

4.6 Support Provided by Other Organizations

4.6.1 Pacific Northwest National Laboratories

- **Consulting/Technical Review** – Provide technical support and report review, as requested.

- **Database Access** – Provide access to Hanford databases related to boreholes and borehole logs and interpretory reports relevant to surface and subsurface geological, hydrogeological, and geophysical conditions.

4.6.2 Duratek Federal Services

- Provide technical support and repair services for the logging sondes and associated equipment as needed.

4.6.3 AdvanceMed Hanford

- **Occupational Health Services** – HSC-provided baseline and screening services required for unique work requirements on the Hanford project (e.g. - tank farm baseline chemicals screening).

4.6.4 Lourdes Occupational Health Center

- **Health Screening and Occupational Health Services** – GJO-provided services required for employees' health screening and general health to work on the Hanford project. These services include all services associated with employees' physical and mental health.

4.6.5 Fluor Hanford, Inc.

- **Property Management** – Provide property management services for logging trucks and equipment.

- **Operations Support** – Provide waste designation and disposal, radiological support, and well services support.

4.6.6 CH2M HILL Hanford Group, Inc.

- **Tank Farms Field Support** – Provide operators for the RAS and RMS logging vehicles, tank farms access coordination, and radiological support.

4.6.7 General Services Administration

- **Vehicle Maintenance –** Provide services administration to supply support vehicles along with maintenance and repair for these vehicles, as needed.

4.7 Key Personnel

Table 4-1 lists the key personnel involved in the project.

Table 4-1. Key Personnel for the Hanford Geophysical Logging Project

Title	Name	Telephone Number
DOE-RL		
Project Manager	John Morse	(509) 376-0057
DOE-ORP		
Project Manager	Robert Lober	(509) 373-7945
	DOE-GJO	
Contracting Officer's Representative	Joel Berwick	(970) 248-6020
Stoller		
Program Manager, Task Manager	Mike Butherus	(970) 248-6332
Project Manager	Brian Mathis	(509) 376-6454
Technical Lead (Hanford)	Rick McCain	(509) 376-6435
Technical Lead (GJO)	Carl Koizumi	(970) 248-7797
Project Field Lead	Alan Pearson	(509) 531-1246 (cellular) (509) 376-6440 (office)
QA Manager	Donna Riddle	(970) 248-6433
QA Coordinator	Farlie Pearl	(970) 248-6430
H&S Coordinator	Mike Hurshman	(970) 248-6468
Records Coordinator and Office Administrator	Trina Guthrie	(509) 376-6454
Fluor Hanford, Inc. (FH)		
Geophysical Logging Coordinator	Scott Peterson	(509) 372-9126
200 Area Remedial Action Project Task Lead	Bruce Ford	(509) 372-9105
CH2M HILL Hanford Group, Inc. (CHG)		
Tank Farms Logging Coordinator	David Myers	(509) 373-3972
Tank Farm Monitoring Operations	Ryan Dodd	(509) 373-5629

5.0 Project Control

5.1 Project Control System

Effective project management is achieved through detailed planning, quality baselines, performance evaluation, funds management, change control, and timely and appropriate corrective actions. The *GJO Project Management Control System Manual,* GJO 12 (Stoller 2002d), defines the integrated planning and control system used to achieve task order objectives. This control system is based upon DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets,* and the American National Standard institute/Electronic Industries Alliance (ANSI/EIA-748-1998), *Earned Value Management Systems*.

The level of control for baseline development, project/task order performance, and change management on the individual subprojects is consistent with the guideline requirements of DOE Order 413.3.

Stoller is responsible for the control and reporting of projects and task orders. Projects include task order direct cost, budget, and performance and indirect allocations from administrative task orders. For simplification, the term "task orders" will be used to discuss the control of both projects and task orders except where specific requirements apply.

5.1.1 Work Breakdown Structure

Specific work elements of the current work scope are defined in the Work Breakdown Structure (WBS), which is modified on an annual basis to reflect the changing task order work scope. These work elements are assigned to specific performing organizations as cost accounts. The cost account is the level at which detailed technical definition, work scope, and schedules are established and principal project management and control occur.

5.1.2 Budgets and Performance Measurement

Task order planning is initiated by the use of the Task Order Plan (TOP) that delineates work scope and specifies the responsible organization and manager, performance period, major milestones, and budget for the work activity.

A work package is a manageable unit of planned work within a TOP and is integrated with the baseline schedule. The Task Manager must plan all assigned work in detail in the TOP. The end result is a time-phased budget for the work to be performed. This time-phased budget is the Budgeted Cost of Work Scheduled (BCWS). BCWS is the baseline to which all task order performance is measured. Changes to the Performance Measurement Baseline (PMB) are controlled throughout the life of the task order.

The status of each work package is periodically prepared to provide an assessment of work progress. This assessment is the budget value earned in accomplishing the planned activity and is called Budgeted Cost of Work Performed (BCWP). The BCWP measurement technique

chosen for a work package is based on the type of work to be performed. Due to the fluctuating priorities and funding of this project, these have typically been level of effort.

All data and any resulting variances are reported for analysis at the subtask level and are summarized through the WBS to levels required for internal and external project reporting. A Monthly Status Report (WBS summary level) and Cost Performance Report (CPR) are prepared and submitted to DOE for integration into its program CPR. The monthly status report consists of current and year-to-date BCWS, the BCWP, Actual Cost of Work Scheduled (ACWS), Actual Cost of Work Performed (ACWP), and variance data formatted by WBS element. The task order monthly reports are forwarded to the DOE-RL Task Order Manager (TOM), the DOE-ORP Project Manager, and the DOE-GJO Contracting Officer's Representative (COR). Further details of budget and performance measurement are presented in the *GJO Project Management Control System Manual,* GJO 12 (Stoller 2002d).

5.1.3 Variance and Trend Analysis

Variance reporting thresholds have been established to identify variances that could have a potential impact on the task order. The Task Manager, in conjunction with the DOE TOM, establishes the variance thresholds. The variance reporting thresholds for both the cost and schedule variances for the project are equal to or greater than $\pm$ $10,000 and 10 percent for the current period and equal to or greater than $\pm$ $25,000 and 10 percent for the cumulative period.

The Variance Analysis Report (VAR) is a formal narrative prepared by the Task Manager for those variances that exceed the thresholds for current monthly or cumulative budgeted cost expenditures. The function of the VAR is to communicate the types of variances occurring, the cause of the variances, and the action that will be taken to correct the variances.

An Estimate at Completion (EAC) is developed and compared to the Budget at Completion to identify cost problems early on that may impact the task order. The EAC is the basis for cash flow analysis for the task order. If the analysis leads the Task Manager to believe that the EAC should be revised, an Estimate to Complete (ETC) is prepared. The ETC is a time-phased estimate of the Task Manager's best projection of costs to complete the remaining work; the ETC only considers currently authorized work. The ETC is estimated and shown by fiscal-year periods on the VAR and is added to the existing ACWP to determine the task order EAC.

Trend analysis is accomplished by using either current-month or cumulative-to-date data. Data analyses help the Task Manager to judge the status of the task order on the basis of trends. The Task Manager also forecasts the future of the task order from past trends.

5.1.4 Change-Control Procedure

Baseline change control (BCC) provides the formal process to manage changes to the project's technical baseline. The key purpose of the BCC process is to maintain the integrity and tractability of the project baselines. Adding new work scope that has not been included in the most current version of the task order or deletion of work scope that is specifically included in the most current version of the task order requires that task order modifications be proposed

immediately upon identification of the changes required. Either change in work may be requested by DOE or identified by the contractor. Only DOE-approved changes will be incorporated into the baseline.

- **DOE-Requested Change** – the DOE TOM will submit a letter to the COR requesting a proposal from the contractor for a modification. The letter will identify the changes to work scope, delivery schedules, and any other required information to meet government requirements. The COR will review and forward the letter to the contractor for response.

- **Contractor-Requested Change** – The contractor shall submit a letter to the COR identifying the necessary changes, providing a justification for the changes, and requesting authorization to provide a proposal to DOE to modify the task order. The COR will forward this letter to the TOM for review, comment, and concurrence or refusal for the contractor to provide a proposal. The COR will instruct the contractor to either provide a proposal or discontinue the charge effort.

5.2 Cost Accounting

5.2.1 Accounting Input

Actual costs are collected at the work-package level as work is performed. All accounting input documents are coded with a "cost code" that identifies the work package and task order and the type of cost (e.g., labor and materials). Input to the Universal Financial System includes the following source documents:

- **Labor** – Employee time records, completed weekly by each employee, provide data for distribution of labor charges to projects and overhead costs.

- **Material** – Receiving reports are prepared when ordered material and equipment arrive. Interim payment invoices on long-lead equipment are also used.

- **Miscellaneous Charges** – Miscellaneous charges are generated through documents, such as travel expense reports.

- **Subcontractors** – Charges for subcontractors are paid after receipt of an approved Progress Payment Application form. Subcontract costs are accrued monthly from percentage completion provided by the task manager for each active subcontract.

5.2.2 Accounting Reports

The Universal Financial System produces a variety of financial reports, including the reports listed below, which summarize information by cost account, WBS element, and organization.

- Task order reports contain all charges to the work packages, regardless of source. For example, all Stoller labor, materials, and other charges coded to the charge code are reported, by type of cost, on the report.

- WBS reports summarize costs by WBS element. Reports are provided at all levels of the WBS, from the lowest level to the total company level.

- Organization reports summarize all charges incurred by the functional organization by type of cost; the reports are printed at two levels of detail. The first-level breaks out the organization's charges by WBS element. The second level totals all charges by the organization, regardless of WBS element.

5.3 Scheduling and Estimating

5.3.1 Scheduling

GJO uses the integrated Project Control System described in this plan. Program Management and Control (PMC) uses Primavera software to produce Critical Path Method schedules when appropriate for each task order.

Current activities are based upon level of effort; however, when appropriate, specific schedules will be prepared and statused monthly, at a minimum.

5.3.2 Estimating

PMC uses the G-2 estimating system to develop estimates. The estimates are typically based on historical information and standard estimating tables. The estimates are integrated with the schedules, as appropriate, to establish the task order performance measurement baseline.

6.0 Quality Assurance

6.1 General Description of the QA Program

Work performed by or for Stoller must comply with the requirements of the GJO QA Program. The QA Program is designed to adopt and implement the requirements of DOE Order 414.1A, *Quality Assurance*. The QA Program also implements 10 CFR 830, Subpart A, *Quality Assurance Requirements*. A graded approach to implementation is described within the *GJO Quality Assurance Manual*, GJO 1 (Stoller 2002e).

The philosophy and requirements have been supplemented with ASME NQA-1-1997, *Quality Assurance Requirements for Nuclear Facility Applications*; ANSI/ASQC E4-2002, *Quality Systems for Environmental Data and Technology Programs – Specification with Guidance for Use*; ANSI/ISO/ASQ Q9001-2000, *Quality Management Systems*; and ISO-14001-96, *Environmental Management Systems*.

In addition to these requirements, management has established and incorporated other sound business practices to ensure quality in all aspects of work performed. These requirements take into account the principles of integrated safety management. The *GJO Integrated Safety Management System Description,* GJO 10 (Stoller 2002b), describes the use of GJO policies and procedures to implement a single management system to meet Integrated Safety Management System (ISMS) and QA requirements.

6.2 Program Quality Level

The Stoller Program Manager has determined that Q-Level requirements apply to both the Hanford Tank Farms Vadose Zone Monitoring Project and Hanford 200 Areas Spectral Gamma Baseline Characterization Project. This determination is based on the importance of the records and the value of protecting them from the risk of loss or damage, testing of computer program software, and procurement activities for critical components or spare parts.

6.3 Quality Assurance Program Requirements

Quality Assurance Criterion and Instructions (QAIs) contained within the *GJO Quality Assurance Manual*, GJO 1 (Stoller 2002e), are applicable to the Hanford Geophysical Logging Project as follows.

The Stoller QA Program consists of two requirement levels: Standard Level and Quality (Q) Level as defined in the *GJO Quality Assurance Manual,* GJO 1 (Stoller 2002e). The Standard Level is a base QA program that applies to all activities performed by Stoller. The Q-Level requires more stringent QA provisions. Q-Level requirements that are applicable to the project activities cited above are addressed in Criterion 4 and 7, and QAIs 6.2 and QAI 7.3 are selectively applied and graded on the basis of the complexity and importance of the work.

6.3.1 Criterion 1 – Quality Assurance Program

The standard requirements of the criterion and the following QAIs apply.

The QA Program applies to all activities and organizations, including technical and administrative functions. This QA Program Plan (QAPP) identifies and tailors the requirement to needs of the project.

Notification of Incoming Work

The Program/Project Manager will notify the QA Manager of any Task Order modifications resulting in new work or substantial changes to existing scope and activities. This information will be used to determine how the QA Program applies to the work.

QA Organizational Interfaces

The organizational structure and interfaces for the Project are shown in Section 4.0 of this management plan. Personnel other than those responsible for performing the work perform the verification of quality. QA staff may also verify the achievement of quality by audit or surveillance. Individuals who have been identified as responsible for the verification of quality shall be provided access to the activities and documentation that support those activities.

QAI 1.1 – Responsible Organizations for QA Program Implementation

The matrices contained in this QAI may be used as a cross reference of the Quality Assurance Program to DOE O 414.1A for a comparison to the quality standards referenced above.

QAI 1.2 – Development and Approval of QA Program Plans

The QA Coordinator, in consultation with the Project Manager, is responsible for developing and maintaining this QAPP. At a minimum the Program Manager, Project Manager, and QA Manager will review the plan. The plan will be revised as necessary to reflect changes or additional QA requirements resulting from task order modifications, needs identified through management assessments, or at the direction of management.

Because the QAPP is a section within this Project Management Plan, reviews and the associated records and distribution lists are the responsibilities of the Project Manager through management of the overall plan.

QAI 1.3 – Administrative and Technical Planning

The Project Manager is responsible for assigning the planning of project activities. Requirements for preparing administrative and technical planning documents, including their revision, and for conducting and documenting activity reviews before the start of work are presented in this section. Information concerning the use of Program Directives for making temporary changes to project plans or procedures or project-specific changes to support

organization desktop procedures is presented in QAI 1.6, *Program Directives*, and may be used when authorized by the Program Manager.

Planning documents and activity reviews should address appropriate administrative, technical, safety, environmental, and quality assurance issues. The Project Manager is responsible for assigning responsibility for preparation and maintenance of planning documents and assuring reviews by affected organizations are documented. The Project Manager is also responsible for determining the need for an activity review and the level of rigor and formality, including associated documentation. Activity managers/leads typically will implement the activity review process to ensure logistics, contingencies, and pre-requisites have been identified and addressed before the start of work.

QAI 1.4 – QA Review of Documents that Implement the QA Program

QA reviews of project documents will be performed in accordance with this QAI. The QA Manager will review procurement documents, potential nonconformance reports, lessons learned summaries, management assessments, external assessment responses, and documents that define interfaces affecting QA or assign work to QA. The QA Coordinator will review project-related documents at the request of the QA Manager, Project Manager, or the originating organization.

QAI 1.5 – Work Readiness Reviews

This QAI provides the company-wide procedure for performing and documenting the Work Readiness Review (WRR). A WRR will be considered for new or modified high-risk operations or when significant safety, quality, or environmental issues exist.

A formal WRR provides objective evidence, through independent review, that the necessary project planning has taken place. A WRR helps ensure that the operation will proceed safely and effectively by confirming that potential safety incidents, release of waste to the environment, or other delays have been minimized. The WRR will identify and document residual risks, the actions taken to mitigate these risks, and/or management's acceptance of those risks.

If the risks associated with the project are low, the Project Manager may apply the intent of a WRR through a less formal review process for minor systems, projects, processes, or activities with low risk. See "Activity Reviews" in QAI 1.3, *Administrative and Technical Planning,* for guidance.

QAI 1.6 – Program Directives

Instructions for the Program Manager's use and implementation of Program Directives to modify project documents or support organization desk procedures are provided in this QAI. Affected organizations and the QA Coordinator will review draft directives. The QA Coordinator will assist project management in the administration of the directive process. Distribution of directives will be consistent with the distribution for the document that is modified.

6.3.2 Criterion 2 – Personnel Training and Qualification

The standard requirements of the criterion and the following QAIs apply.

Project management is responsible for determining minimum position requirements, periodically evaluating employee training needs, and ensuring personnel are trained and qualified to perform their assigned work. All personnel will be familiarized with the appropriate requirements and plans before starting work.

Project personnel working out of the Grand Junction Office will be trained in accordance with the *GJO Training Manual,* GJO 4 (Stoller 2002g), and applicable employee requirements identified in Sections 7 and 8 of this management plan. Project personnel working out of the Hanford Office will be trained in accordance with Sections 7.0 and 8.0 of this management plan. Training must be documented and maintained in accordance with the requirements established by the implementing site.

Training for the spectral gamma-ray logging system operators and data processors is required. Should additional training be needed for the performance of a task, the Project Manager will notify the line manager who is responsible for ensuring personnel are trained and qualified. On-the-job training, as applicable, will be documented using the guidelines established in the *GJO Training Manual*, GJO 4 (Stoller 2002g).

QAI 2.1 – Certification of Personnel

Personnel qualified and certified in accordance with this QAI and internal desk instructions may perform QA oversight activities.

6.3.3 Criterion 3 – Quality Improvement

The standard requirements of the criterion and the following QAIs apply.

Quality improvement aims to prevent problems and improve quality. Several implementation mechanisms that support quality improvement efforts are addressed in this criterion.

All personnel are encouraged to identify and suggest improvements. In addition, all personnel have the freedom and authority to stop work until effective corrective action has been taken. Those items, services, and processes that do not meet established requirements must be identified, controlled, and corrected in accordance with the importance of the problem, the work affected, or the associated risk.

QAI 3.1 – Dissemination of Lessons Learned

Instructions for preparing and disseminating Lessons Learned are provided in this company-wide instruction. The Project Manager should identify internal lessons learned that may be of benefit to others within the project or company. These may be identified through post-activity evaluations, assessments, and internal reviews or incident/accident investigations. The report

will be provided to the Program Manager with a copy to the QA Manager, to determine if a wider distribution through the requirements of this QAI would be of benefit. QA serves as the coordinator, assists in distribution, and maintains the file of lessons learned information.

QAI 3.2 – Nonconformance Reporting, Disposition, and Closure

The QA Coordinator should be contacted and will consult with the QA Manager for advice or assistance in the evaluation of conditions and the subsequent treatment of identified nonconformance. Items or activities requiring a formal Nonconformance Report will be documented and resolved in accordance with the requirements of this instruction.

Nonconforming items discovered before delivery or transmittal to other organizations do not require formal Nonconformance Report (NCR) reporting. These items will be documented and evaluated by internal means internal to the organization as part of the routine reviews and evaluations.

6.3.4 Criterion 4 – Documents and Records

The standard requirements of this criterion are applicable to all project documents. Q-Level requirements apply to records storage as defined below.

Documents:

Project documents will be controlled to ensure that the personnel performing the work use current and correct documents. Control and distribution of project planning documents are the responsibility of the Hanford Records Coordinator.

Project documents (plans and procedures) that establish requirements and are used in the performance of work will be managed in accordance with the guidelines established in Section 2, "Manual Preparation, Control, and Distribution," of the *General Administrative Procedures Manual*, STO-100 (Stoller 2002h), which explains the system procedures.

Technical reports will be coordinated through the Information Management Resource's Visual Technology Group and issued through the Project Manager through a transmittal letter that identifies the distribution.

Reviews:

Originators of project documents are responsible for determining the need for review of those documents and selecting reviewers when necessary. Reviews must be documented, comments resolved, and records retained in accordance with this criterion and records management requirements. Records for the current version of project documents and activity reviews will be maintained by the Hanford Records Coordinator in accordance with the working file index.

Records:

The *GJO Records Management Manual,* GJO 9 (Stoller 2002f), and the *General Administrative Procedures Manual*, STO 100 (Stoller 2002h), Section 3.0, "Records Management Procedure," define the procedural requirements for all records created or maintained by Stoller personnel. The Hanford Geophysical Logging Project Working File Index defines the records to be kept for both projects, as well as the record copyholder, transfer instructions, retention schedule, quality level, and necessary annotations. The File Index specifies the maximum retention requirement for quality records as 75 years.

Storage of records for the project has been defined as a Q-Level requirement. The applicable Q-Level requirements for the project are receipt control, storage procedures, and records storage facilities.

6.3.5 Criterion 5 – Work Processes

The Standard requirements for "Work Controls," "Identification and Control of Items," and "Calibration and Maintenance of Monitoring and Data Collection Equipment" of the criterion and the following QAIs apply.

The Standard requirements are implemented by the use of qualified personnel to perform the work as defined and controlled by the *Hanford Tank Farms Vadose Zone Monitoring Project Radionuclide Assessment System Logging System Operating Procedures* (DOE 2003c), *Hanford Geophysical Logging Project, Logging System Operating Procedures* (DOE 2003b), and *Hanford Geophysical Logging Project, Data Analysis Manual* (DOE 2003a).

Procedures for the identification and control of items are required for handling, shipping, and storage of sensitive, critical, high-value or perishable items to preclude deterioration or damage to the items or the environment.

QAI 5.1 – Instruction and Procedures

Procedures written to control the work for the project will implement the Standard requirements of Criterion 5, the elements of QAI 5.1, and follow the guidelines in the *General Administrative Procedures Manual,* STO 100 (Stoller 2002h), Section 2, "Manual Preparation, Control and Distribution," which explains the system for procedures. Temporary changes to project plans or procedures may be made using QAI 1.6, *Program Directives*, or by other methods approved by DOE-RL and/or DOE-ORP for the Hanford Geophysical Logging Project.

QAI 5.2 – Test Control

This QAI is applicable to equipment standardization, operating checks, or other comparisons that are a part of the operations, start-up, or test procedures for spectral gamma logging, the collection and analysis of characterization and verification samples, and environmental and personnel monitoring samples. Documentation of operational checks and standardization must be maintained as detailed in procedures specific to the equipment.

6.3.6 Criterion 6 – Design

The Standard and Q-Level requirements of the criterion and the following QAIs apply.

Requirements for design processes, technical reviews, and computer software requirements are addressed in this criterion and apply to activities that provide input to the design or design changes.

The standard requirements for computer software apply and are augmented by the "Computer Software for Nuclear Facility Applications," which apply as Q-Level requirements.

Computer programs used in modeling or data reduction will be verified or validated before being used to produce project results. The activity manager using the computer program is responsible for software quality control and the appropriate verification or validation documentation.

QAI 6.1 – QA Review of Design Input and Output Documents

QA will review design documents in accordance with QA desk instructions when the design organization has determined the QA review may be beneficial.

QAI 6.2 – Design of Data Collection Programs

The collection of data for evaluation will be performed using the data collection design process described in this QAI.

The processes for the collection of environmental data will be defined, controlled, verified, and documented. The data collection design process includes the establishment of data quality objectives (DQOs), design of field sampling events, test methods, data validation/verification methods, techniques for assessing the limitations on data use, and data reporting to satisfy the DQOs.

Design or procedure changes will be subject to the same review and approval process as the original design. Changes and revision controls will be applied. QAI 1.6, *Program Directives,* provides a method for documenting temporary changes to project documents.

6.3.7 Criterion 7 – Procurement

The Standard and Q-Level requirements of the criterion and the following QAIs apply.

The *GJO Procurement Manual,* GJO 18 (Stoller 2002c), contains procedural requirements and elements that apply to procurement document control. The degree of control for procured services or items will be determined at the time of the QA Manager's review of the procurement document.

Q-Level requirements apply to Supplier Evaluation and Selection when the procurement documents require the supplier to have an established QA Program as detailed in this criterion and amplified in QAI 7.2, *Supplier Selection.*

QAI 7.1 – Procurement-Related Nonconformance

Nonconformance Reports (NCRs) for purchased items and services will be processed in accordance with this QAI and QAI 3.2. Procurement-related nonconformances will be administered through the appropriate subcontract administrator in conjunction with the QA Manager.

QAI 7.2 – Supplier Selection

The QA Manager will participate in the selection of suppliers for procurement requisitions that require supplier pre-award evaluation or survey and for other procurements when Procurement or the Project Manager requests assistance.

The QA Manager will participate in supplier selection activities when a Source Selection Board, as described in this QAI, performs a pre-award evaluation.

QAI 7.3 – Procurement Acceptance Planning

The procurement of certain items, such as spectral gamma logging systems, and associated with the project has been defined as a Q-Level requirement. In addition, the requirements of this QAI may be invoked as a result of the QA review of the procurement document per Criterion 7. The applicable Q requirements for the project are acceptance planning, including receipt inspection, functional testing, source inspection, and accompanying supplier documentation/pedigree, scheduling or coordination, nonconformances, and documentation.

The *GJO Procurement Manual,* GJO 18 (Stoller 2002c), contains the general principles and practices applicable to the procurement and control of materials, equipment, supplies, and services.

6.3.8 Criterion 8 – Inspection and Acceptance Testing

The standard requirements of this criterion are applicable.

Measuring and test equipment (M&TE) used in assessment, verification, or analysis to generate project data must be calibrated and maintained. All other M&TE must be identified and classified, including instruments used to meet environmental and radiological requirements.

Inspections that verify and ensure conformance to specific requirements shall be planned, performed, and documented in accordance with written instruction, procedures, or checklists. Individuals other than those who performed the work must perform acceptance inspections. Final inspections must include a review and examination of records. Re-inspection is required for any items that have been modified, repaired, replaced, or reworked after final inspection.

Identification and control of items will be specified in instructions, procedures, and drawings that control a specific task. Items having a limited operating life will be marked to show the expiration date.

6.3.9 Criterion 9 – Management Reviews and Assessment

The standard requirements of the criterion and the following QAIs apply.

Management at all levels participates in Management Reviews that evaluate functions contributing to the company's organizational success. Management Reviews are a series of ongoing activities that have been integrated into regular management functions. Routine elements of Management Reviews are listed in this criterion.

QAI 9.1 – Management Assessments

When directed by the general manager, the Program Manager will identify, plan, schedule, and appoint teams to perform Management Assessments of the Hanford Tank Farms Vadose Zone Monitoring Project and Hanford 200 Areas Spectral Gamma Baseline Characterization Project. The QA Manager will be contacted during the planning phase to assign personnel to provide assistance and support as requested. Records and documentation of management assessments are maintained by QA.

6.3.10 Criterion 10 – Independent Assessment

The standard requirements of the criterion and the following QAIs apply.

The QA Manager is responsible for the overall scheduling and planning of Independent Assessments. The QA Manager will coordinate assessment and surveillance activities with DOE-RL and/or DOE-ORP, DOE-GJO, and the HSC through the Project Manager.

The Project Manager will be responsible for responding to finding reports, evaluating, investigating, and documenting corrective actions. The QA Coordinator, as delegated, will assist in tracking and verifying the corrective actions.

QA manages the files for independent assessments, surveillances, and external assessments.

QAI 10.1 – Internal Independent Assessments

Qualified assessors, including lead assessors certified in accordance with QAI 2.1, *Certification of Personnel*, will conduct assessments. QA personnel will perform assessments of the project or elements to evaluate the implementation of and compliance with the requirements of the QA program.

Lead assessors will be independent of the project, although the QA Coordinator for the project may assist. Persons outside the QA organization may provide technical expertise.

QAI 10.2 – Surveillances

Surveillances of project elements will be performed, as necessary, to evaluate implementation of and compliance with the requirements of the QA program.

QAI 10.3 – External Assessment Tracking and Response

The QA Manager will assist Stoller management in assessment tracking and response. Verification of corrective actions may be assigned to the QA Coordinator for follow-up review.

7.0 Training

The purpose of this section is to define training requirements for unescorted access to work areas, outline training record requirements, and to define management and employee responsibilities.

7.1 Training Requirements

Because some of the boreholes identified for logging are located within waste site or tank farm boundaries, training requirements for entry are outlined in the respective HASP (DOE 2005a; DOE 2005b). Training requirements for access to specific areas are governed by site-specific HASPs under the supervision of the responsible HSC. Stoller personnel will comply with all site-specific and task-specific training requirements at the Hanford Site.

In addition to Hanford site-specific and task-specific training, the logging engineers are required to obtain a Commercial Driver's License (CDL) and complete the following Hanford-specific training: *Hazardous Materials Drivers Training* (Course 020077), *Hazardous Material General Awareness Training* (Course 020075), and *Introduction to Federal Motor Carrier Safety Regulations* (Course 020083). A CDL is required to drive the logging vehicle on public roads. Completion of the Hazardous Material Drivers Training course is required under Department of Transportation regulations in Title 49 CFR Parts 100-180, "Research and Special Programs Administration."

7.2 Training Records

It is important for employees to be able to access the work areas in a timely manner. Copies of training records for Stoller employees who will be working on the Hanford Site will be sent to HSC Training Records for inclusion in the computer training records system to expedite access to the work areas. This information will then be downloaded to ACES, which is used to control access to tank farms and other posted radiation areas such as source storage and work sites. Training records sent to HSC may include copies of the employee's DOE Radiation Worker training cards.

The Stoller Hanford Office Administrator will serve as the training records contact with HSC Training Records.

It will be necessary for Stoller to maintain an accurate record of the training completed by employees at the Hanford Site. In order to access this information, a Privacy Act form will be completed and submitted to the DOE-RL Privacy Act Officer. This information will enable Stoller to receive and maintain a record of all training completed by Stoller employees.

7.3 Training Responsibilities

The following sections describe the responsibilities of Stoller management and employees regarding training.

7.3.1 Management Responsibilities

- Ensure each employee has received and maintained current training at the level required, before work is performed.
- Maintain on-the-job training documentation.
- Ensure that only qualified and properly trained personnel perform assigned work.
- Develop performance standards and training requirements for all positions within management's area of responsibility.

7.3.2 Employee Responsibilities

Stoller employees who will be working at the Hanford Site are required to:

- Ensure they have completed all required training before accessing a specific work area.
- Maintain training requirements (e.g., defensive driving) established by GJO.
- Ensure all operating and safety procedures are followed when operating the logging units.

Stoller employees reporting to work at the Hanford Site from GJO are required to:

- Contact the Project Manager to determine any additional training requirements and to schedule required Hanford Site training as necessary.

8.0 Health and Safety

The Stoller Health and Safety organization will maintain two HASPs for borehole geophysical logging: one for logging with the RAS/RMS (DOE 2005b), and one for logging with the SGLS/HRLS (DOE 2005a). The HASPs provide a review of the regulatory environment and address the applicable health and safety requirements for logging and equipment operations, including DOE orders, Federal, State, and local regulations, and HSC requirements. Site-specific HASPs for site access and control requirements are developed by the responsible HSCs to provide adequate characterization and safety measures for the individual site conditions and requirements.

8.1 Requirements

Stoller complies with the health and safety requirements of DOE orders, OSHA, Stoller Health and Safety Program, and the applicable HSC Health and Safety Program elements. Specifically, the Stoller HASPs address the OSHA requirement for an employer to develop and implement a site-specific plan in accordance with 29 CFR Part 1910.120, *Hazardous Waste Site Operations and Emergency Response*. Stoller relies upon current HSC HASPs.

The Stoller HASPs were prepared to satisfy the requirements from 29 CFR 1910, *Occupational Safety and Health Standards*, 29 CFR 1910.120, *Hazardous Waste Site Operations and Emergency Response*, and 29 CFR 1926, *Safety and Health Regulations for Construction*. The assignment of employee training, medical surveillance, engineering and administrative controls, personal protective equipment, and monitoring requirements for the site are all based on the respective Hanford Site HASPs from the HSCs.

The Stoller HASPs apply to operating procedures applicable to the logging equipment, including: decontamination procedures, training requirements, emergency response, medical surveillance requirements, and special procedures required for spill containment.

8.2 Notification and Reporting

Stoller personnel follow the requirements in the *GJO Health and Safety Manual*, GJO 2 (Stoller 2002a), for event notification and reporting. HSC and DOE-RL and/or DOE-ORP are included in the notifications. The applicable HSC is responsible for reporting under the DOE Occurrence Reporting and Processing System (ORPS). Stoller assists HSC in the development of Stoller-related ORPS reports. As required, Stoller provides qualified personnel to assist in any required investigations.

8.3 Training

Stoller employees are not permitted to participate in or supervise field activities until they have received the level of training required by their job function and responsibility. Training requirements are detailed in Section 7.0 of this plan, the applicable HASP, and meet requirements of 29 CFR Part 1910.120, the Stoller HASP, and those applicable requirements in the HSC HASP.

Stoller, in cooperation with the HSC Training Center and HAMMER Training Center, has established reciprocity of training and a complete list of training requirements. Employees are trained through Stoller and HSC to meet requirements.

9.0 Documentation and Reporting

9.1 Project Documentation

The project documentation is determined on the basis of project requirements, DOE orders, and other applicable regulations. This section briefly describes the project documentation and the system for management of project records. Project status reports are described in Section 9.2 with the reporting requirements.

9.1.1 Project Management Plans, Implementing Plans, and Procedures

All activities are performed in accordance with approved plans and procedures. This project management plan serves as a programmatic plan for all activities associated with the Hanford 200 Areas Spectral Gamma Vadose Zone Characterization Project and the Hanford Tank Farms Vadose Zone Monitoring Project. Lower tier plans and procedures are prepared in sufficient detail to govern specific project activities (see Table 9-1).

9.1.2 Technical Reports

Stoller prepares detailed technical reports as activities are completed or milestones are reached. All the technical reports are transmitted to DOE-RL and/or DOE-ORP. These reports are internally peer reviewed before release to DOE-RL and/or DOE-ORP and stakeholders. All technical reports are approved by one or both technical leads, as necessary, and reviewed by the Stoller Project Manager before release to DOE-RL and/or DOE-ORP.

9.1.3 Records Management

The *GJO Records Management Manual*, GJO 9 (Stoller 2002f), and the *General Administrative Procedures Manual*, STO 100 (Stoller 2002h), are established to manage all project records in accordance with requirements of *GJO Quality Assurance Manual,* GJO 1 (Stoller 2002e), as required in Section 6.0 of this plan and DOE orders. These documents define company policy and procedures and will be used in conjunction with the Hanford Geophysical Logging Project Working File Index for complete record management guidance. The working file index defines project records, file organization, file retention, bar coding instructions, and other project-specific records guidance that is needed to effectively manage project records.

Table 9-1. Document Matrix

Document	Organization Responsibility			
	Stoller	DOE-RL	DOE-ORP	HSC
Project Management Plan	**A**			
SGLS Health & Safety Plan	**A**	**A**		**R**
RAS Health & Safety Plan	**A**		**A**	**R**
Data Analysis Manual	**A**			
RAS Operating Procedures	**A**			
SGLS Operating Procedures	**A**			
RMS Operating Procedures	**A**			
Monitoring Plan	**A**		**A**	
Vadose Zone Characterization Plan	**A**	**A**		
Project Technical Reports	**A**			
Quarterly Monitoring Reports	**A**			
Annual Monitoring Reports	**A**		**A**	
Special Investigation Reports	**A**			
Borehole Log Reports	**A**			
Waste Site Reports	**A**	**A**		**R**

A = approve, **R** = review

9.1.4 Data Management

Data management encompasses the generation, storage, processing, and archiving of all data generated for the project. The term "data" describes individual elements of information that may be recorded within textual documents or stored on electronic media. Regardless of the storage media, the central concern is that each information type has an accurate and precise definition that is used consistently throughout the project.

The data management system is used at the individual data-generator level, in the project database, and at the technical report level. It is a means of ensuring that all functional organizations and other parties are using the same data. The data management system includes the methods and procedures used to define and maintain the information used for specific activities. The implementation of the data management system for both projects is defined in the Hanford Geophysical Logging Project Working File Index and the *Hanford Geophysical Logging Project, Data Analysis Manual* (DOE 2003a). These two documents define the format

of the data used for both projects, how the data are to be processed, what data are to be retained, and how the data are to be archived.

9.2 Reporting Requirements

Progress and cost reporting to DOE ultimately are the responsibilities of the Program Manager, but each participating Stoller functional organization has a responsibility to track organizational progress and cost. Reporting requirements are both external and internal.

9.2.1 External Reporting Requirements

External reporting requirements include, but are not limited to, the following documents:

- **Formal Monthly Reports to DOE-ORP and DOE-RL –** Written reports conveying specific information relative to performance against cost and milestone plans. The report summarizes progress for the month and explains cost or schedule variances, with corrective action taken. The cost information report is based on the project WBS. The WBS information is reported in terms of BCWP, ACWP, and BCWS to reflect the earned value of completed work on a monthly basis.

Included in this report are the current approved BCWS and cost-performance report, milestone schedule and status report, and Project Management Summary Report narrative on the project activities.

- **Monthly DOE-ORP/DOE-RL Program Reviews –** Reviews conducted monthly that focus on cost and schedule performance. Topics include all performance issues as well as recommended corrective actions. Issues and resolution are also included.

- **Weekly Highlight Reports to DOE-ORP and DOE-RL –** Written reports that cover highlights, issues, concerns, and general activities. These written reports are supplemented by regular Stoller interface with DOE.

- **Quarterly Monitoring Reports –** Written reports submitted to DOE-ORP summarizing monitoring activities.

- **Annual Monitoring Reports** – Written reports summarizing monitoring activities for the year. These are intended for use as input to the Hanford Surveillance Report, as well as to provide a summary of project activities.

- **Special Investigation Reports** – Memoranda or written reports to address anomalies encountered in the monitoring data. The organization and complexity of these reports will be determined by the nature of the anomaly.

- **Borehole Log Reports –** Brief informal reports summarizing conditions at specific boreholes and presenting the log data in the form of plots.

- **Waste Site Summary Reports –** Reports submitted to DOE-RL summarizing data obtained from logging all available boreholes in the vicinity of a specific site. In addition to log data plots, these reports may also include maps and plans, fence diagrams, and three-dimensional visualizations if appropriate.

- **Technical Reports** – Technical reports addressing specific issues related to geophysical logging.

9.2.2 Internal Reporting Requirements

Internal Stoller reporting requirements include, but are not limited to:

- **Internal Cost Performance Report –** Prepared monthly.

- **Cost Account Variance Analysis Report –** Prepared monthly.

9.3 Project Reviews

The Program Manager, DOE-HQ, DOE-ORP, and DOE-RL may conduct reviews of the project.

The Project Manager routinely conducts Management Reviews as described in Criterion 9 of the *GJO Quality Assurance Manual*, GJO 1 (Stoller 2002e), and specified for project implementation in Section 6.3.9 of this plan. In addition, the Project Manager routinely meets with the functional organizations to provide a forum for discussion of project progress and problems and to resolve management and technical issues. These periodic meetings develop a basis of information to provide the Stoller Project Manager with monthly reports and support monthly reviews of project progress to DOE-RL and DOE-ORP.

Quality improvement processes and reviews are employed at all levels of the operations to prevent problems and make improvements where possible. The methods employed are described in Criterion 3 of the *GJO Quality Assurance Manual*, GJO 1 (Stoller 2002e), and specified for project use in Section 6.3.3 of this management plan.

Technical reviews of major project deliverables are scheduled by the Stoller Program Manager on an as-needed basis within the project and with DOE-ORP and DOE-RL.

DOE-HQ may periodically conduct management assessments of specific project activities. Written evaluations are submitted to DOE-GJO for review and implementation of recommendations.

10.0 References

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